Claims

[1] An apparatus for improving residual stress of piping, which irradiates an outer surface of a T-piping with a laser beam emitted from a laser head, said T-piping comprising a first piping having one end welded and connected to a tubular circumferential surface of a second piping, and

characterized by a circumferential-direction position adjusting structure for moving the laser head along a circumferential direction about a tubular axis of the first piping.

[2] An apparatus for improving residual stress of piping, which irradiates an outer surface of a T-piping with a laser beam emitted from a laser head, said T-piping comprising a first piping having one end welded and connected to a tubular circumferential surface of a second piping, and

comprising:

a circumferential-direction position adjusting structure for moving the laser head along a circumferential direction about a tubular axis of the first piping;

a tubular axial-direction position adjusting structure for moving the laser head along a tubular axial direction of the first piping;

a radial-direction position adjusting structure for moving the laser head along a radial direction of the first piping; and

an emission-direction adjusting structure for changing an emission direction of the laser beam in a plane including the tubular axis of the first piping, by changing a direction of the laser head.

[3] An apparatus for improving residual stress of piping, which irradiates an outer surface of a T-piping with a laser beam emitted from a laser head, said T-piping comprising a first piping having one end welded and connected to a tubular circumferential surface of a second piping, and

comprising:

a circumferential-direction position adjusting structure for moving the laser head along a circumferential direction about a tubular axis of the first piping;

a tubular axial-direction position adjusting structure for moving the laser head along a tubular axial direction of the first piping;

a radial-direction position adjusting structure for moving the laser head along a radial direction of the first piping;

a first emission-direction adjusting structure for changing an emission direction of the laser beam

in a plane including the tubular axis of the first piping, by changing a direction of the laser head; and

a second emission-direction adjusting structure for changing the emission direction of the laser beam in a plane intersecting the plane including the tubular axis of the first piping, by changing the direction of the laser head.

[4] The apparatus for improving residual stress of piping according to any one of claims 1 to 3, characterized in that

the laser head is provided in a laser head support portion so as to be moved in an oscillatory manner.

[5] The apparatus for improving residual stress of piping according to any one of claims 1 to 3, characterized in that

a plurality of the laser heads are provided in a laser head support portion.